



## UNITED STATES PATENT OFFICE

2,189,993

## FIRE STOP FOR APPARATUS RACKS

Raymond B. Ramsey, Cambridge, Mass., assignor  
to Bell Telephone Laboratories, Incorporated,  
New York, N. Y., a corporation of New York

Application August 20, 1938, Serial No. 225,910

6 Claims. (Cl. 179-91)

This invention relates to a relay or apparatus rack and more particularly to a fire stop for reducing the possibility of the communication of fire from one section of the rack to another.

It is customary in communication systems to provide racks having horizontally disposed mounting plates thereon on which relays or other apparatus are mounted. To protect such relays or other apparatus from dust, covers are provided which are attached to the mounting plates or to the racks on the apparatus side thereof. It has been found that with the covers thus installed vertical air shafts are formed through which any fire which may originate in or near the lower portion of the racks may be communicated to the wiring and apparatus on the upper portion of the racks. It is therefore the object of the present invention to provide a fire stop of fire resisting material which may be easily installed on a relay rack to close the vertical channels thereof and to thereby protect the wiring from damage incident to fire.

To attain this object, a panel of fibre or other fire resisting material, is provided for insertion between adjacent mounting plates of the relay rack and so shaped as to fill the entire space between the upright channels of the rack and the relay covers. The panel is of sufficient width to extend forwardly from the rack beyond the conductors of the cables which are fanned out horizontally for connection to the relay terminals and is cut away at its front corners to provide clearance for the vertical runs of the cables. To enable the panel to be installed after the relays have been assembled on the rack and wired to the cables, it is constructed in two end sections, the outer ends of which are shaped to fit the contours of the inside of the vertical channels of the rack and provided with spring clips for engagement with flanges of the channels. The two sections when in place with respect to the vertical channels are joined at their adjacent inner ends by a third or splicing section formed as a channel member which may be slipped inwardly towards the back of the rack over the inner ends of the two end sections.

For a more complete understanding of the invention reference may be had to the following detailed description taken in connection with the accompanying drawing, in which:

Fig. 1 shows a section of the wiring side of the relay rack with a fire stop panel constructed in accordance with the invention installed thereon;

Fig. 2 shows a cross-sectional view of the rack taken along section line 2-2 of Fig. 1;

Fig. 3 is a cross-sectional view of the center or splicing section of the panel taken along section line 3-3 of Fig. 2; and

Fig. 4 is a perspective view of one of the clips by which each end section of the panel is secured to a flange of a rack channel.

The relay rack is of the well-known type comprising upright channel members 1 and 2 of structural steel connected together at their top and bottom ends by cross frame members (not shown). The channels are disposed with their flanges intumed. Secured to the front flanges 3 and 4 of the channel members by screws 5, are a plurality of horizontally disposed mounting plates 6. Each plate is provided with holes 7 through which screws 8 may be inserted for securing relays or other apparatus to the inside of the plate and with slots 9 through which the soldering terminals of the relays or other apparatus may extend to the wiring side of the rack.

Suitably supported from each channel on the wiring side of the rack is a group of cables extending vertically from the top to the bottom of the rack as designated by the numerals 10 and 11. The conductors of these cables are fanned out horizontally and connected to the terminal lugs of the relays mounted on the mounting plates as indicated by the numerals 12 and 13. Thus when the rack is equipped with relays secured to the mounting plates and the wiring is completed thereto there will be vertical runs of the cable conductors adjacent to each channel member 1 and 2 and a horizontal run of the cable conductors along the wiring side of each mounting plate 6. Dust covers (not shown) are positioned over the relays on the other side of the mounting plates.

With the dust covers in place it will be apparent that vertical air shafts are formed between the ends of adjacent covers and between the outside ends of certain of the covers and the inside of channel members 1 and 2 through which rising currents of air may pass from the bottom towards the top of the rack. Should a fire occur in or near the relays mounted on a lower portion of the rack, it would be transmitted through these air shafts thereby endangering relays mounted on the upper portions of the rack. To eliminate this fire hazard, and to confine any fire to as small a portion of the rack as possible, fire stops in accordance with the present invention have been developed for effectively closing the vertical air shafts at several points between the top and bottom of the rack.

Each fire stop 14 is arranged for insertion be-

tween two adjacent mounting plates and comprises a panel of fibre or other fire resisting material made in three sections for enabling its installation after the rack has been equipped and wired. The two end sections 15 and 16 of the fire stop panel are of similar shape, each having its outer end cut as indicated at 17 to fit the inner contour of one of the channel members 1 or 2 and notched as indicated at 18 to fit over the front flange 3 or 4 of one of the channel members. The sections are of sufficient width to extend from the rear flanges of the channel members forwardly beyond the horizontal runs of the cable conductors. The outer corners of the end sections are cut away as indicated at 19 to abut as closely as possible against the vertical groups of cables 10 and 11 when the outer ends of the sections are in engagement with the inner surfaces of the channels to reduce the air space between the ends of the sections and the cables.

For uniting the sections 15 and 16 after they have been positioned with respect to the channel members, a middle or splicing section 20 is provided. This section comprises a central strip 21 of fibre of the same thickness as the end sections 15 and 16, a strip 22 of spring steel on either face thereof and two outside strips 23 of fibre. The strips are assembled as disclosed in Fig. 3 to form a double channel member, the several strips being held in assembled position by rivets 24 extending therethrough. The central strip 21 of the sections is of slightly less width than the gap between the adjacent ends of the end sections 15 and 16.

To install the fire stop the two end sections 15 and 16 are placed in position as previously described and then the central section 20 is slid back over the adjacent ends of the end sections with their edges embraced between the edges of the spring strips 22 into the position disclosed in Fig. 2. The spring strips thus grip the ends of the end sections and hold the three sections securely in their assembled position.

To keep the fire stop from slipping downwardly on the channel members 1 and 2 the outer end of each end section is provided with a pair of spring clips 25, one of which is shown in detail in Fig. 4. Each clip is substantially U-shaped, its two arms 26 and 27 serving to embrace a flange of a channel member as disclosed in Fig. 2 and the base of the U being extended and bent at right angles to form a support 28 by means of which the clip may be secured to an end section 15 or 16 of the fire stop panel. As disclosed in Fig. 1 two clips 25 are assembled one on each face of an end section and secured thereto by rivets 29 which extend through holes 30 in the support portions 28 of both clips and through holes in the end sections.

What is claimed is:

1. An apparatus rack comprising vertical standards, horizontally disposed mounting plates secured thereto, rows of apparatus mounted on one face of said plates, with their terminals extending therethrough horizontally positioned cables of wires on the other face of said plates connected to the terminals of said rows of apparatus, and a panel of fire resisting material interposed between adjacent mounting plates filling the entire space between said standards and extending outwardly beyond the cables on the wiring side of said rack.

2. An apparatus rack comprising vertical

standards, horizontally disposed mounting plates secured thereto, rows of apparatus mounted on said plates, vertically disposed cables secured to said standards fanned out horizontally to the rows of apparatus and a panel of fire resisting material interposed between adjacent mounting plates filling the entire space between said standards and extending outwardly beyond the horizontally fanned-out portions of said cables, said panel being cut away at its outside corners to fit closely against said vertical cables.

3. An apparatus rack comprising vertical channel members, horizontally disposed mounting plates secured thereto, rows of apparatus mounted on said plates, vertically disposed cables secured to said members fanned out horizontally to the rows of apparatus, a panel of fire resisting material interposed between adjacent mounting plates having its outer ends shaped to fit the inner contours of said channel members and to fit closely against said vertical cables, said panel extending outwardly beyond the horizontal fanned-out portions of said cables and spring clips secured to the ends of said panel and embracing flanges of said channel members to hold said panel in position.

4. An apparatus rack comprising vertical channel members, horizontally disposed mounting plates secured thereto, rows of apparatus mounted on said plates, vertically disposed cables secured to said members fanned out horizontally to the rows of apparatus, a panel of fire resisting material interposed between adjacent mounting plates having its outer ends shaped to fit the inner contours of said channel members and to fit closely against said vertical cables, said panel extending outwardly beyond the horizontally fanned-out portions of said cables and a pair of U-shaped spring clips secured respectively to opposite faces of each end of said panel and embracing flanges of said channel members to hold said panel in position.

5. An apparatus rack comprising vertical channel members, horizontally disposed mounting plates secured thereto, rows of apparatus mounted on said plates, vertically disposed runs of cables secured to said members fanned out horizontally to the rows of apparatus, and a panel of fire resisting material interposed between adjacent mounting plates and extending outwardly beyond the horizontally fanned-out portions of said cables, said panel comprising two similar end sections each formed at its outer end to fit against the inside of one of said channel members and against one of said vertical runs of cables, and a central splicing section channeled to embrace the inner adjacent ends of said end sections whereby said panel may be readily assembled into such a position as to completely fill the space between said channel members and between said vertical cable runs.

6. An apparatus rack comprising vertical channel members, horizontally disposed mounting plates secured thereto, rows of apparatus mounted on said plates, vertically disposed runs of cables secured to said members fanned out horizontally to the rows of apparatus and a panel of fire resisting material interposed between adjacent mounting plates and extending outwardly beyond the horizontally fanned-out portions of said cables, said panel comprising two similar end sections each formed at its outer end to fit against the inside of one of said channel members and against one of said vertical runs of

cables, and a central splicing section having a central spacing strip flanked on either face with a strip of spring material and an outer strip of fire resisting material of greater width than said  
5 spacing strip to form two channels for embracing the inner adjacent ends of said end sections

whereby said panel may be readily assembled into such a position as to completely fill the space between said channel members and between said vertical cable runs.

RAYMOND B. RAMSEY. 5